King County

Program for Assertive Community Treatment (PACT)

One Year Outcomes

Department of Community and Human Services
Mental Health, Chemical Abuse and Dependency Services Division

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Executive Summary

King County implemented the Program for Assertive Community Treatment (PACT) to reduce psychiatric hospital and jail use for up to 180 individuals who are among the most frequent utilizers of these systems. Program for Assertive Community Treatment is a federally-recognized evidence-based practice that provides comprehensive, individualized assistance to people with severe and persistent mental illness. The PACT incorporates a team approach, a low staff to client ratio, and services provided 24 hours per day, seven days per week in the community in a time unlimited, flexible manner. King County operates two PACT Teams (downtown/north and south/east). With PACT and other similar programs, King County aims to continue its efforts to reduce the cycles of psychiatric hospitalizations, jails, and homelessness that often accompany serious and persistent mental illnesses through providing a supported housing model tailored to the needs of clients with the most complex needs.

The purpose of this report is to present one year outcomes for participants who entered the PACT program during its first six months of operation. Process evaluation findings are detailed in a separate report disseminated September 2008.

Results

Program for Assertive Community Treatment began enrolling participants in July 2007. Participants who entered during the first six months (prior to December 31, 2007) were examined regarding one year outcomes. Of the 65 participants that comprise this first six-month cohort:

- 66 percent were male
- 45 percent were ethnic minority
- 90 percent had a schizophrenia spectrum diagnosis
- 44 percent had a substance abuse problem
- 54 percent were referred from state hospitals; 85 percent had psychiatric hospitalizations during the prior year and the remaining 15 percent were from other intensive community support programs for individuals with frequent prior hospitalizations
- 37 percent had incarcerations during the year prior to enrollment.

The PACT participants experienced:

- High program retention – 94 percent were retained in the program for at least one year

- Significantly reduced psychiatric hospital admissions (47 percent reduction) and days (76 percent reduction)
- No significant change in jail bookings or jail days
- Significantly increased overall days in the community (88 percent increase)
- No change in use of the Dutch Shisler Sobering Center and Detox facility (used by only a few PACT participants)
- Significantly increased average income, with an increase in the proportion of PACT participants having stable income from 72 percent to 87 percent
- More apparent alcohol and drug use, but more movement toward active treatment.

Recommendations

During the first six months of the PACT, 65 people were enrolled, and their one year outcomes were evaluated for this report. The program was highly successful in retaining participants for one year and participants showed significant reductions in psychiatric hospitalizations and increases in overall community tenure. These findings are in line with research regarding PACT programs nationally that show the most consistent impacts of the program are in reducing hospitalization.

The positive outcomes shown in this report, coupled with the general satisfaction of PACT participants, staff, and stakeholders shown in an earlier report, suggest that the program is on track for meeting its primary aim of improved community tenure for program participants. High quality staff and a strong team approach that provides a range of flexible, community-based services contribute to program success, as noted by staff and stakeholders. Issues raised in a prior report suggest that responsiveness to consumer requests and strengthening team leadership and staff training and supervision are areas for quality improvement. The current report points to the following additional recommendations:

- Continue processes in use that help retain individuals in the program and reduce hospitalizations
- Increase focus on treatment for substance use, as more individuals are using drugs and alcohol
- Increase attention to reducing incarcerations for the subset of individuals at risk for incarceration
- Increase access to innovative supported employment and peer support services, as only ten and five participants respectively received these services.

Table of Contents

Background

> Joe is a 55 year old male who met the PACT team after several psychiatric hospitalizations in a year due to problems associated with inconsistency in adhering to a medication regime. The PACT team was able to work with him to maintain a consistent medication regime, and to keep his apartment tidy. Today, he is enjoying his apartment and has become a member of a local church only a few blocks from where he lives. While he needed twice daily visits for medication (psychiatric and medical) upon enrollment, he is now doing very well with three PACT medication visits per week. Upon enrollment, he typically called the office dozens of times per day, sometimes yelling and swearing at staff, and he had great difficulty doing errands in the community, as he was viewed as intimidating or threatening. Now he has the skills to successfully do his own grocery shopping, banking, and other errands. His primary care physician, who has worked with this patient for ten years, says she has never seen him look so well. He has not had any psychiatric hospitalizations or jail incarcerations during the year following PACT enrollment.

The above description is an example of a participant in King County's PACT. He demonstrates a representative level of participant impairment at admission, and how the program helps participants regain stable, productive and meaningful lives.

The PACT provides evidence-based, comprehensive, individualized assistance to people with severe and persistent mental illness. Program for Assertive Community Treatment helps individuals who experience significant difficulties with maintaining stable community living situations, relationships, work and/or school because of a severe and persistent mental illness. The PACT is intended for individuals who are most disabled by their mental illness and have been hospitalized many times or for long periods. King County operates two PACT teams with a target enrollment, when full, of 90 clients per team.

More than 25 research studies demonstrate the effectiveness of PACT in reducing hospital stays and improving housing stability while being more satisfactory to consumers and their families than standard care. The PACT is one of the six practices endorsed by the "Evidence Based Practice Project" sponsored by the Robert Wood Johnson Foundation, Substance Abuse and Mental Health Services Administration (SAMHSA), National Alliance for the Mentally Ill (NAMI) and several state and local agencies. The PACT programs in Washington State are funded by the state's Mental Health Division.

Purpose of this Report

The purpose of this report is to present one year outcomes for participants who entered the PACT program during its first six months of operation, i.e., prior to December 31, 2007. Process evaluation findings are detailed in a separate report disseminated September 2008.

This report includes data regarding participant characteristics and vignettes and one year outcomes, including hospital and jail utilization.

Program Description

King County operates two PACT Teams. Downtown Emergency Service Center (DESC) PACT assists individuals living in downtown, as well as north Seattle and King County. The south-east team operated by Navos, helps people in southeast King County. Each team has 90 spaces allotted for PACT participants.

Services

The PACT involves:

- Team Approach – PACT teams consist of a psychiatrist, nurses, chemical dependency specialist, employment specialist, social workers, and peer specialists working together to help PACT consumers achieve their goals.

- Low staff to client ratio – a team consists of 10–12 direct care staff serving about 90 consumers.

- Fixed Point of Responsibility – rather than sending consumers to a variety of providers for assistance, the team provides most, if not all, the services an individual needs.

- In Vivo Services – staff provide most services in the community where the help is needed.

- Time Unlimited – services are provided as long as they are needed. There is no fixed timeline.

- Flexible Services – services are based upon the individual needs/goals of each consumer. The services change as the needs change.

- 24/7 Crisis Services – services are available when they are needed.

Referrals can be made to the PACT team from state and local hospitals, local jails, outpatient service providers, and intensive residential and community support programs within the King County public mental health system. Per Washington State PACT standards, recruitment and enrollment during this initial year has been limited to an average pace of four-six consumers per months, so that each enrollee would have sufficient staff contact to facilitate stabilization.

The PACT teams assertively engage the referred consumer to determine his/her level of interest and to assess whether the individual would be best served by the intensive outpatient services provided by PACT. Once enrolled, the consumer and team develop mutually agreed upon goals and plans to achieve these objectives. The type and frequency of services are provided according to the individual needs of the consumer. Frequently, consumers just leaving the hospital will require daily – sometimes two to three times a day – contact from the team to adjust to the new

living situation and greater independence. As the consumer stabilizes and requires less contact, PACT responds accordingly. The team, consisting of trained professionals from multiple disciplines, is able to provide virtually all the services required by consumers. Those struggling with substance abuse/dependency receive the help of trained chemical dependency specialists while vocational specialists assist participants interested in working. Nursing staff and psychiatric prescribers attend to the physical and mental health needs of consumers. Meeting daily, the team members keep each other updated on participants' progress and develop interventions as needed. The team is available 24 hours a day, seven days a week to respond to consumers who experience a crisis.

> "Bob" is a 42 year old African American male who, when he first met the PACT team, had lived predominantly in group homes, often going back and forth between the group home and the inpatient psychiatric hospital. He also had a medical condition that would put him in the hospital somewhat regularly. The PACT team worked with Bob to obtain his first permanent housing (an apartment in downtown Seattle) and assisted him with cooking and other household chores which had not been part of his normal routine when living in group home environments. He had not taken care of his own apartment before and was not doing dishes or cleaning the bathroom, or attending to his personal hygiene (he had extreme fears of water). He also failed housing inspections. During the year subsequent to PACT enrollment, he has enjoyed his apartment and has become actively involved in his apartment chores, and he showers more frequently. He has begun thinking about volunteering at the local public library and he has only been to the hospital once.

Housing

Most consumers entering PACT are without stable housing. With the assistance of housing subsidies from King County Housing Authority, the City of Seattle Housing Authority and Landlord Incentive funds provided by a grant from the Department of Community Trade and Economic Development's Homeless Grant Assistance Program (HGAP), King County Regional Support Network PACT teams are able to place consumers in apartments complete with furniture, toiletries and telephone. A dedicated housing liaison locates housing units for PACT participants and helps resolves any problems that may arise regarding housing. Team members work with participants to learn basic skills of cooking, grocery shopping, and maintaining a clean home.

"Naomi" is a 32-year old middle Eastern-born woman. She came to the PACT team after having spent years living in various shelters around Seattle. Before meeting the PACT team, she was hospitalized after attempting to stab herself in the chest in a local department store. The PACT was able to work with her to obtain permanent housing and work on gaining coping skills to reduce the feelings she had to inflict self-harm. Today, she volunteers at a local thrift store and is enrolled in English as a Second Language (ESL) classes at a local community college.

Eligibility Criteria

To be eligible for PACT, a person must meet all of the following criteria:

1. Primary mental health diagnosis with priority given to people with schizophrenia, other psychotic disorders and bipolar disorder

2. Functioning impairment as indicated by significant difficulty with at least one of the following:

    a. Maintaining consistent employment at a self-sustaining level
    b. Consistently carrying out the homemaker role (e.g., meals, washing clothes, etc.)
    c. Consistently performing daily living tasks (e.g., obtaining medical or legal services, avoiding common hazards, meeting nutritional needs, maintaining personal hygiene)
    d. Performing daily living tasks except with significant support or assistance
    e. Maintaining safe living situation (e.g., forgetting stove, unsanitary, evictions, etc.)

3. Continuous high-service needs as demonstrated by at least one of the following:

    a. High use of psychiatric hospitals (e.g., two or more admissions or emergency services/year)
    b. Persistent or recurrent severe major symptoms (e.g., affective, psychotic, suicidal)
    c. Co-occurring substance use disorder greater than six months duration
    d. High risk or recent history of arrests or incarceration
    e. Significant difficulty meeting survival needs or in substandard housing, homeless
    f. Residing in an inpatient or supervised community residence, but clinically assessed to be able to live in a more independent living situation if intensive services are provided
    g. Requires residential or institutional placement if more intensive services not available
    h. Difficulty utilizing office-based outpatient services or other less-intensive programs

4. Residence in King County or a plan to move to King County in near future

5. Be at least 18 years of age

6. Ability to live in independent or semi-independent housing with programmatic supports

Evaluation Design

The evaluation includes both a process and outcomes evaluation.

Process Evaluation

The process evaluation, reported September, 2008 included:

- Characteristics of the participants who entered during the first year of operation
- Case vignettes
- Participant, staff, and stakeholder feedback.

Another component of the process evaluation was a review of fidelity of the program to the PACT model conducted by the Washington Institute for Mental Health Research and Training (WIMHRT).

Outcome Evaluation

The outcome evaluation uses a pre-post within-group design. That is, one year pre-program measures are compared with measures taken during the year following program admission. The outcome evaluation includes:

- Characteristics of participants entering the program during its first six months (through December 31, 2007)
- Participant disposition at exit from program
- Analysis of change in participant:
  - housing stability
  - days homeless
  - substance use
  - admissions and days in inpatient psychiatric hospitals
  - King County jail bookings and days
  - psychiatric hospitalizations
  - employment status
  - income support.

Data Sources

Quantitative and qualitative data are collected for the PACT evaluation from the following sources:

- King County Mental Health, Chemical Abuse and Dependency Services Division Management Information System (MIS)
- Monthly PACT form - includes changes in residence, hospitalization, incarceration
- Quarterly PACT form - includes income, substance use
- PACT referral form - participant characteristics, referral information
- King County jail records
- Participant survey
- Staff survey
- Stakeholder survey
- Case vignettes.

Participant Characteristics

PACT Team Enrollment

The PACT began recruiting participants in June 2007 with the first enrollee in July 2007. This report focuses on one year outcomes for individuals who entered the program during its first six months (prior to December 31, 2007). This first six month cohort included 65 participants, 44 of whom were enrolled by the Downtown Emergency Service Center (DESC) team. During the full first year of PACT, 94 people were enrolled and an additional 53 received initial engagement. The breakdown by PACT program by team is shown in Table 1.

Table 1. PACT enrollment and engagement

	First six month cohort	First year Enrolled	First year Engaged
DESC	44	51	26
South/East(SE)PACT	21	43	27
Both teams	65	94	53

While most of the participants in the first six month cohort were enrolled into the DESC team, the south-east team caught up somewhat during the subsequent six months. It should also be noted that many of those who are currently "engaged" will ultimately become enrolled.

PACT Referral Sources

Most of the PACT enrollees in the first six month cohort were from the state hospital system as shown below. The bulk of remaining enrollees were referred from the community mental health system, including its residential treatment facilities.

Figure 1. PACT Referral Sources

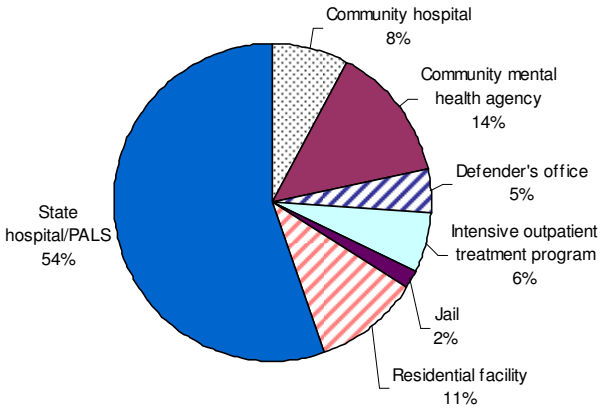


Table 2. PACT referral sources

Referral sources	N
State hospitals/Program for Assertive Living Skills (PALS)	36
Community mental health agency	9
Residential treatment facility – Long Term Rehabilitation (LTR)	7
Community hospitals	5
Intensive outpatient treatment program (e.g., other PACT, Expanding Community Services (ECS)	4
Defender's office	3
Jail	1
Total	65

Demographics

About two-thirds of the participants are male (n=43; 66 percent), and participants have an average age of 43.3 yrs (SD=12.3) with range 20 to 66 years old. About half of the participants are non-white (45 percent) with African-Americans comprising the largest non-white group, as shown below. Six individuals (9 percent) speak a primary language other than English.

Figure 2. PACT Participant Ethnicity

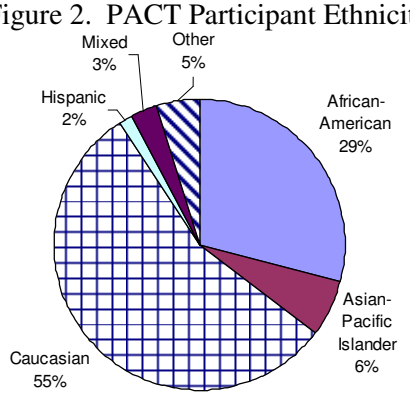


Table 3. Participant Ethnicity

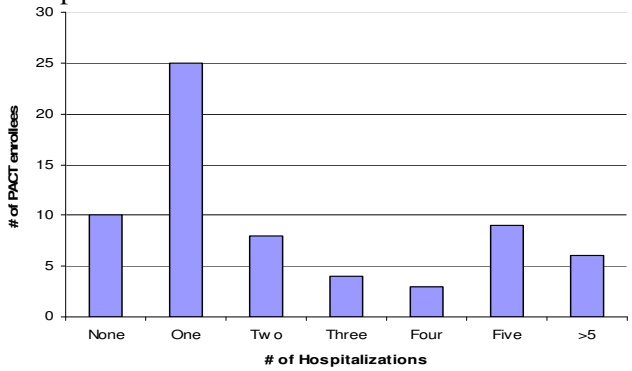
Ethnicity	N
Caucasian	36
African-American	19
Asian-Pacific Islander	4
Mixed	2
Hispanic	1
Other	3
Total	65

Hospitalizations

The average number of hospitalizations during the year prior to being referred for the 65 participants enrolled during the first six months of the PACT program was 2.5 (SD=2.7) and the range was 0 to 13. The average number of hospital days during the year prior to PACT enrollment was 189.8 (SD-=128.9).

Only ten of the 65 participants had no hospitalizations during the year prior to coming to PACT, and those individuals came from intensive residential or community support programs for individuals with significant functional impairment and prior hospitalizations.

Figure 3. Participant Hospitalizations in Year Prior to PACT Enrollment



Incarcerations

The average number of incarcerations during the year prior to PACT enrollment was .54 (SD=.90) with a range of 0 to 5. The average number of jail days was 14.8 (SD=36.1). Most of the 65 participants (n=41) had no incarcerations during the year prior to PACT enrollment.

Diagnoses

As the table and figure below shows, most PACT participants had a schizophrenia spectrum diagnosis (e.g., schizophrenia, schizoaffective, other psychotic disorder).

Figure 4. PACT Participant Diagnoses

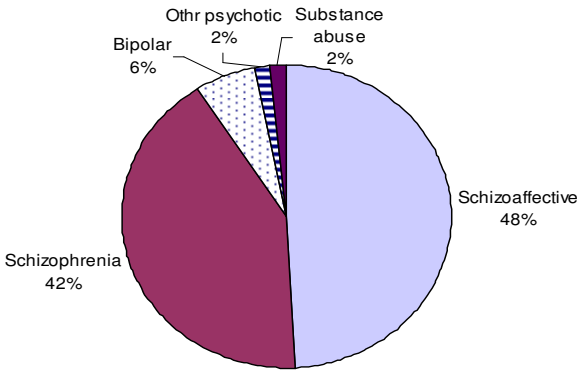


Table 4. PACT participant diagnoses

Diagnosis	N
Schizophrenia spectrum	83
Bipolar/depression	9
Other	2
Total	94

Substance Use

The table below shows the rate of alcohol and drug use of PACT participants at the point of PACT admission. Only a small proportion was observed to have alcohol or drug abuse or dependence. In part, this is due to institutional settings that suppressed substance use in which many participants were living prior to PACT enrollment. Furthermore, staff may not have had adequate time with the client to make careful observations of alcohol and drug use. Indeed, nearly half were noted at the time of referral to have a longstanding co-occurring substance use disorder (see Table 5 below).

Table 5. PACT participant observed substance use during the 90 days prior to enrollment

Substance use severity	Alcohol		Drug	
	N	%	N	%
Abstinent	48	74%	51	78%
Use without impairment	12	18%	5	8%
Abuse	3	5%	6	9%
Dependence	2	3%	3	5%
Total	65	100%	65	100%

Using the "stages of change" model of substance abuse treatment, at the time of admission nine (14 percent) of participants were in the "pre-engagement" stage; twelve (18 percent) were in the "engagement" stage, and six (9 percent) were in the "early persuasion" stage. Remaining individuals were abstinent or in remission from both drugs and alcohol at the time of admission.

Homelessness

As noted above, 43 of the 65 participants in the first six month cohort were referred directly from either the state hospital or a residential treatment facility. Of the remaining participants, seven were homeless just prior to enrollment.

Income and Employment

About three-fourths of PACT participants (n=47; 72 percent) were receiving social security benefits of some type (i.e., Supplemental Security Income (SSI), Social Security Disability Income (SSDI) or Social Security Administration (SSA) at the time of enrollment. Nine of the 65 participants also received food stamps. One person also received $91/month in child support. At the point of admission, no PACT participants were receiving income from General Assistance-Unemployable/General Assistance Expedited Medical Disability (GAU/GAX), the Veteran's Administration, or employment.

High-Service Needs

The table below shows reasons for intensive service for the first six month cohort (one missing data).

Table 6. Reasons for high service need (n=64)

High service need as indicated by at least one of the following...	N	%
a. Persistent or recurrent severe major symptoms (e.g., affective, psychotic, suicidal)	51	80%
b. High use of psychiatric hospitals (e.g., 2+ admissions or emergency services/year)	44	69%
c. Residing in an inpatient or supervised community residence, but clinically assessed to be able to live in a more independent living situation if intensive services are provided	39	61%
d. Requires residential or institutional placement if more intensive services not available	38	59%
e. Significant difficulty meeting survival needs or in substandard housing, homeless	37	59%
g. Imminent risk of becoming homeless (e.g., repeated evictions or loss of housing)	32	50%
f. Co-occurring substance use disorder greater than six months duration	28	44%
h. High risk or recent history of arrests or incarceration	28	44%

The most common reasons reported were severe symptoms or high hospital use, but nearly all (n=58; 91 percent) showed more than one reason (data not shown).

Functioning Impairment

> Coming out of Chartley House residential treatment facility, "Carl" was very fearful of life on his own and was certain he would fail and end up back in the hospital. Initially, simply taking medications independently created considerable anxiety. Already, since his admission in June 2008, only two months ago, staff report that this client is exhibiting increased confidence and self assurance on a daily basis. He has now joined a cooking group and is very thankful for the fun and support he finds in that group. He is exhibiting increased independence, making his own food, and taking the bus to appointments and to the library. He is generally very cheerful and thankful for the support he is receiving and is reaching out to other PACT clients who live in the same apartment complex as he.

The table below shows the types of functioning impairment for the first sixth month cohort (n=65; one missing data). Most PACT participants have impairment in community living tasks and employment, about half show impairment in homemaking roles, and daily living skills. Fewer show safety concerns. Nearly all (n=54; 84 percent) showed impairment across multiple domains (data not shown).

Table 7. Functioning impairment due to mental illness (n=64)

Significant difficulty in functioning regarding at least on of the following:	N	%
a. Maintaining consistent employment at a self-sustaining level	61	95%
b. Consistently performing community living tasks (e.g., obtaining medical or legal services, avoiding common hazards; meeting nutritional needs; maintaining hygiene)	49	77%
c. Consistently carrying out the homemaker role (e.g., meals, washing clothes, etc.)	37	58%
d. Performing daily living tasks except with significant support or assistance	35	55%
e. Maintaining safe living situation (e.g. forgetting to turn off stove; unsanitary conditions)	21	33%

Additional data regarding functioning were collected to describe more fully the severity of impairment in domains that could affect community placement. As shown in the three tables below, at least two-thirds of consumers needed some prompting or assistance with the

functioning domains noted, and similar proportions had significantly compromised social skills and perception of their own mental illness.

Table 8. Functioning domains

	Independent	Prompting needed; some problem	Consistent monitoring, assistance needed; Significant problem	Unable to perform - even with consistent assistance; Hands-on assistance needed; problems may be life-threatening
1. Self-care tasks (i.e., hygiene, toileting, eating) (n=64)	19 (30%)	24 (38%)	20 (31%)	1 (2%)
2. Potential for harm for self/others (including inability to avoid dangers) (n=64)	20 (31%)	19 (30%)	23 (36%)	2 (3%)
3. Household tasks (e.g., food shopping, meal prep, housecleaning, washing clothes, child-care) (n=62)	10 (16%)	25 (39%)	25 (39%)	2 (3%)
4. Managing medical condition(s) (n=63)	19 (30%)	18 (29%)	24 (38%)	2 (3%)

Table 9. Consumer's perception of his/her mental illness and treatment (n=64)

Recognizes mental illness and symptoms; willingly medication compliant and initiates treatment; good insight; manages symptoms well	Accepts mental illness to some degree; generally responsive to treatment; may occasionally demonstrate resistance to treatment or deny mental health problems	Limited understanding of his/her mental illness; frequently minimizes mental health problems; prompting is often required for medication compliance; ambivalent about treatment	Denies illness and symptoms; demonstrates little or no insight; not med compliant without prompting; resists services; symptoms of illness frequently compromise individual's functioning
2 (%)	18 (%)	32 (%)	12 (%)

Table 10. Consumer's social skills and abilities to tolerate others, cooperate, etc (n=64)

Mostly "gets along"; if approached, can tolerate input & responds with minimal problems; some ability to negotiate interpersonal differences; has friend(s)	Difficulty coping with stress; sometimes exhibits angry outbursts and non-cooperative with others; accepts limited feedback about behavior; some social contacts	Frequent difficulty engaging positively with others; withdrawn, isolated; minimal insight regarding behavior consequences; few social contacts	May seem intimidating/off-putting to others and provoke verbal or physical attacks; often responds in angry, profane, or menacing ways; significantly impaired ability to deal with stress; no apparent social network
9 (%)	20 (%)	22 (%)	13 (%)

One Year Outcomes

Below are one year outcomes for the first six month cohort of participants, that is, individuals who entered the program between July 1, 2007 and December 31, 2007. Specifically, this section provides dispositions at one year after admission and change from the year prior to

PACT admission compared to the subsequent year regarding hospitalizations, incarcerations, income support, substance use, and employment.

Participant Disposition at Exit from Program

Of the 65 participants who enrolled in PACT prior to December 31, 2007, 64 (98 percent) were still in the program after six months and 61 (94 percent) were retained for at least one year. One moved out of King County, one was lost to contact, one had a long-term incarceration and one decompensated and was discharged to a Long-term Rehabilitation residential facility for more intensive services. The one year retention rate in our study exceeds the 78-85 percent rates found in other similar PACT programs (Bond, McGrew, & Fekete, 1995; Herinckx, Kinney, Clarke, & Paulson; 1997).

Psychiatric Hospitalizations

As shown in the table below and Figure 7, psychiatric hospital admissions were reduced from 163 to 87 (47 percent reduction) and hospital days dropped from 12,337 to 2958 (76 percent reduction). These reductions were statistically significant. The number of people who had no hospitalizations tripled. Further, only one client was discharged to other intensive residential or community support programs.

As many PACT participants came to the program directly from long-term hospitalizations, they had little opportunity prior to enrollment to be "at-risk" for additional hospitalizations. With more time in the community, there is more opportunity for brief hospitalizations. As such, we also analyzed, hospitalizations relative to the days "in community", i.e., not in either jails or hospitals. This analysis shows that hospitalizations per 30 days "at-risk" were significantly reduced.

Table 11. Change in Psychiatric Hospitalizations

Psychiatric Hospitalizations	First 6-month cohort (N=65)	
	Year Pre-enrollment	Year Post-enrollment
Total hospital admissions	163	87
Total hospital days	12,337	2958
Average hospital admissions	2.51 (2.7)[1]	1.34 (1.8)*
Average hospital days	189.8 (128.9)	45.5 (71.6)*
Hospitalizations per days "at-risk" - # hospitalizations/(days in community /30)	1.2 (3.0)	.19 (.30)*
No hospitalizations	10 (15%)	30 (46%)

[1]standard deviation in ()
*statistically significant change p<.05 based on t-tests and Wilcoxon rank sum

Jail Incarcerations

As shown in the table below and Figure 7, jail bookings and days did not significantly change for the first six month cohort of PACT participants. The proportion of individuals with no bookings increased slightly. Most PACT participants had no bookings during either time period. Note that when an individual was on a jail "hold" but transferred to a psychiatric facility for evaluation, days were counted toward the hospitalization only, not the jail stay.

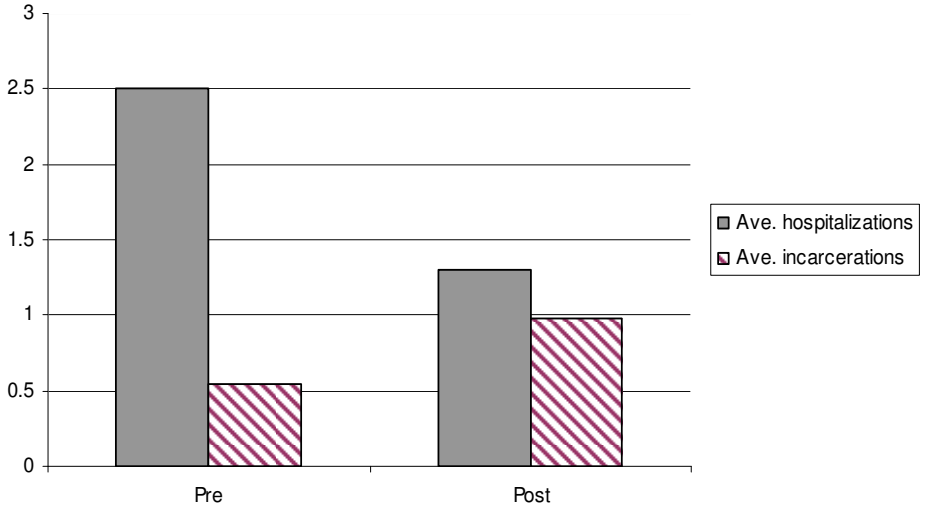
Similar to the analysis of hospitalizations, we analyzed jail incarcerations per days "at-risk" in the community, i.e., not in either jails or hospitals. This analysis shows that in contrast to the slight (non-significant) increase in average jail incarceration, incarcerations per 30 days "at-risk" were slightly, but not significantly reduced. Incarcerations prior to PACT enrollment were likely suppressed by participants' long hospital stays.

Table 12. Change in Jail Incarcerations

Jail incarcerations	First 6-month cohort (N=65)	
	Year Pre-enrollment	Year Post-enrollment
Total jail incarcerations	35	64
Total jail days	963	1193
Average jail incarcerations	.54 (.90)[1]	.98 (2.1)
Average jail days	14.8 (36.0)	18.4 (41.7)
Incarcerations per days "at-risk" - # incarcerations/(days in community /30)	.31 (1.4)	.17 (.48)
No jail incarcerations	41 (63%)	43 (66%)

[1]standard deviation in ()

Figure 5. Change in Hospitalizations and Jail



Community Tenure

A major aim of PACT is to increase the ability of participants to successfully remain in the community without either hospitalizations or incarcerations. The table below shows that days in the community increased for PACT participants from 10,425 to 19,574 (88 percent increase), and this change was statistically significant.

Table 13. Change in Community Tenure

Community Tenure	First six month cohort (N=65)	
	Year Pre-enrollment	Year Post-enrollment
Total days "in community"	10,425	19,574
Average days "in community"	160.4 (131.0)[1]	301.1 (86.9)*

[1]standard deviation in ()
*statistically significant change p<.05 based on t-tests and Wilcoxon rank sum

Sobering Center and Detox

Use of the Dutch Shisler Sobering Center and King County Detox facility did not change relative to PACT enrollment. Specifically, three PACT participants had a total of four Sobering Center contacts during the year prior to PACT enrollment. During the year following PACT enrollment, three different participants again had a total of four Sobering Center contacts. One person had one detox contact during the year prior to PACT enrollment, and one different person had one detox contact during the year following enrollment.

Substance Use

The table below shows that more participants were using alcohol and drugs after one year in PACT than at the point of enrollment. However, as noted earlier, relatively low substance use at enrollment are due to most participants being referred from institutional settings in which substance use was suppressed, and staff also had little chance to observe substance use behavior on which this analysis is based. Table 14 shows that although more participants were using substances after one year, more were also moving along the "stages of change" toward active treatment.

Table 14. PACT participant change in substance use

Substance use severity	Alcohol		Drug	
	At enrollment	One year	At enrollment	One year
Abstinent	48 (74%)	32 (51%)	51 (78%)	40 (63%)
Use without impairment	12 (18%)	9 (14%)	5 (8%)	4 (6%)
Abuse	3 (5%)	12 (19%)	6 (9%)	9 (14%)
Dependence	2 (3%)	10 (16%)	3 (5%)	10 (16%)
Total	65 (100%)	63 (100%)	65 (100%)	63 (100%)

*Total changed from 65 to 63 due to two people exiting PACT prior to the 4th quarter report in which substance use is reported

Table 15. PACT participant substance use treatment involvement

Treatment involvement	At enrollment		June 2008	
	N	%	N	%
Active treatment	0	0%	2	3%
Persuasion	6	9%	7	11%
Engagement	12	18%	21	33%
Pre-engagement	9	14%	2	3%
Not using	38	58%	31	49%
Total	65	100%	63	100%

*Total changed from 65 to 63 due to two people exiting PACT prior to the 4th quarter report in which substance use is reported

Tim found the transition to community living difficult, and he seemed to feel more comfortable living on the street than living in the housing provided by the PACT Program. He had high levels of anxiety about not being able to succeed on his own. He struggled with substance use/abuse and with anger management and had experienced many losses in his life as a result, including losing the custody of his son. During the year following his enrollment into PACT, he has learned to recognize his feelings and express anger in a verbal rather than physical manner. He also recognizes the temptations of "the street" and is choosing positive and constructive alternatives. He is getting support for his substance use and has been clean and sober now for six months. He is becoming increasingly independent by making his own appointments and using public transportation to get around. He also now has been given visitation rights and sees his son on a regular basis.

Income and Employment Support

At admission to PACT, 47 (72 percent) participants had stable income, while 55 (87 percent) participants had stable income after one year of PACT (note: person with employment at one year also had GAU). The average income from stable sources over all PACT participants increased significantly from an average of $525.5/month to $644.9/month.

Table 16. PACT participant change in income sources

Stable Income Sources	Number of participants	Average $ (SD)	Number of participants	Average $ (SD)
	At enrollment		One year	
SSI/SSDI/SSA	47	Average=$726.6 (SD=$285.2)	53	Average=$744.0 (SD=$241.0)
GAU/GAX	0	0	2	Average=$255.0(SD=$118.8)
Employment	0	0	1	$699
None	18	0	8	0
Total	65	Average=$525.4 (SD=$407.2)	63*	Average=$644.9 (SD=$336.3)
Supplementary income				
Food stamps	9	Average=$78.5 (SE=$56.8)	25	Average=$86.5 (SD=$49.7)
Other	1	$91	2	Average=$52.5(SD=$9.2)

*Two people exited PACT prior to the 4th quarterly report that included income data.

Summary

Program for Assertive Community Treatment (PACT), a federally-recognized evidence-based practice, began enrolling participants in King County in July 2007. PACT incorporates a team approach, low staff to client ratio, and services provided 24 hours per day, seven days per week in the community in a time unlimited, flexible manner. King County operates two PACT Teams (downtown/north and south/east). Participants who entered during the first six months (prior to December 31, 2007) of these PACT programs were examined regarding one-year outcomes. Of the 65 participants that comprise this first six-month cohort:

- 66 percent were male
- 45 percent were ethnic minority
- 90 percent had a schizophrenia spectrum diagnosis
- 44 percent had a substance abuse problem
- 37 percent had incarcerations during the year prior to enrollment.

Over half (54 percent) were referred from state hospitals. Others were referred from intensive community support programs for individuals with frequent prior hospitalizations. Eighty-five percent (85 percent) had psychiatric hospitalizations during the prior year to PACT enrollment. High service needs and functioning impairment were shown across multiple domains for most enrollees.

After one year in PACT, participants experienced:

- High program retention – 94 percent were retained in the program for at least one year
- Significantly reduced psychiatric hospital admissions (47 percent reduction) and days (76 percent reduction)
- No significant change in jail bookings or jail days
- Significantly increased overall days in the community (88 percent increase)
- No change in use of the Dutch Shisler Sobering Center and Detox facility (used by only a few PACT participants)
- Significantly increased average income, with an increase in the proportion of PACT participants having stable income from 72 to 87 percent

- More apparent alcohol and drug use, but more movement toward active treatment.

Discussion and Recommendations

The PACT was highly successful in retaining participants for one year, and participants showed significant reductions in psychiatric hospitalizations and increases in overall community tenure. These findings are consistent with research regarding PACT programs nationally that show the strongest impacts of the program are in reducing hospitalization (Phillips et al., 2001).

It should be noted that because PACT participants were selected on the basis of having high hospital utilization prior to enrollment, the evaluation capitalized on their odds of reducing utilization due to natural stabilization, that is, "regression to the mean". Without a comparison or control group, we cannot conclude that PACT per se caused the changes reported. It could be that people with previously high hospital utilization who do not get PACT would also experience similar declines in hospitalization. However, a primary reason that PACT is a federally-recognized evidence-based practice is that prior research has shown that high fidelity PACT reduces hospitalization to a greater extent than treatment-as-usual (Phillips, et al., 2001). Further, the 47 percent reduction in hospital admissions and 77 percent reduction in hospital days in the current program that draws from a highly challenging and complex population are consistent with or exceed reductions found in other PACT programs with varying selection criteria (Latimer & Nadeau, 1998; Wasmer, Pinkerton, Dincin, Rychlik, 1999).

The positive outcomes shown in this report, coupled with the general satisfaction of PACT participants, staff, and stakeholders shown in an earlier report, suggest that the program is on track for meeting its primary aim of improved community tenure for program participants. High quality staff and a strong team approach that provides a range of flexible, community-based services contribute to program success, as noted by staff and stakeholders. Issues raised in a prior report suggest that responsiveness to consumer requests and strengthening team leadership and staff training and supervision are areas for quality improvement. The current report points to the following additional recommendations:

- Continue processes in use that help retain individuals in the program and reduce hospitalizations.

- Increase focus on treatment for substance use, as more individuals are using drugs and alcohol. This focus could include pre-treatment motivational interventions implemented near the point of referral by the referring entities.

- Increase attention to reducing incarcerations for the subset of individuals at risk for incarceration.

- Increase access to innovative supported employment and peer support services, as only ten and five participants respectively received these services.

Annotated Bibliography

Bond, G., McGrew, J, Fekete, D., (1995). Assertive outreach for frequent users of psychiatric hospitals: A meta-analysis. Journal of Mental Health Administration, 22, 1, 4-16. Using "uninterrupted services" as the definition for program retention, Bond et al. conducted a meta-analysis of prior research and found that 12 month retention averaged 84 percent.

Herinckx, H, Kinney, R., Clarke, G., Paulson, R. (1997). Assertive community treatment versus usual care in engaging and retaining clients with severe mental illness; Psychiatric Services, 48, 10, 1297-1306. These authors found 78 percent retention at one year, however their sample did not necessarily have high prior hospital utilization and their analysis censored deaths and moving out of the service area.

Latimer, E., Nadeau, (1998). Cost-effectiveness of assertive community treatment for the seriously mentally ill in Quebec, Canada; Annual Meeting of the International Society of Technology Assessment in Health Care, 14: 97. They found a 77 percent reduction in hospital days.

Phillips, S., Burns, B., Edgar, E., Mueser, K., Linkins, K., Rosenheck, R>, Drake, R., McDonel-Herr, E, (2001). Moving assertive community treatment into standard practice; Psychiatric Services, 52, 771-779.

Review literature that shows PACT shows greater reductions in hospitalizations and greater housing stability compared with standard community mental health care with clinical case management. Less consistent findings with respect to reductions in incarcerations.

Wasmer, D., Pinkerton, M., Dincin, J., Rychlik, K (1999). Impact of flexible duration assertive community treatment: program utilization patterns and state hospital use. The Journal of Rehabilitation, 65. Found hospitalizations reduced by one-third and hospital days by half.